INTERNATIONAL SEARCH REPORT

International application No.

PCT/US04/19496

A. CLASSIFICATION OF SUBJECT MATTER IPC(7) : F16J 15/40, 15/447; F01D 11/00,1/02			
US CL : 277/347,409-416,418-421; 415/208.2,171.1, 191			
According to International Patent Classification (IPC) or to both national classification and IPC			
B. FIELDS SEARCHED			
Minimum documentation searched (classification system followed by classification symbols) U.S.: 277/347,409-416,418-421; 415/208.2,171.1, 191			
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched			
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)			
C. DOCUMENTS CONSIDERED TO BE RELEVANT			
Category *	Citation of document, with indication, where ap		Relevant to claim No.
х	US 4,273,510 A (AMBROSCH et al) 16 June 1981 (1	6.06.1981), column 4, line 67 to	1-2
 Y	column 5, line 12. Also see Figures 7-8.		1-6
x	US 4,370,094 A (AMBROSCH et al) 25 January 1983 (25.01.1983), entire document US 5,967,746 A(HAGI et al) 19 October 1999 (19.10.1999), see Figure 1.		1
 Y			1-6
Y			1-6
Α	US 881,474 A (JUDE) 10 March 1908 (10.03.1908), see entire document		1-6
Α	US 3,575,523 A (GROSS, JR.) 20 April 1971 (20.04.1971), see Figures 1-3.		1-6
Α	US 2,963,307 A (ROBO) 06 December 1960 (06.12,1960), see Figures 3-4.		1-6
Α	US 4,420,161 A (MILLER) 13 December 1983 (13.12.1983), see entire document.		1-6
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Further documents are listed in the continuation of Box C. See patent family annex.			
	pecial categories of cited documents: defining the general state of the art which is not considered to be of	"T" later document published after the inter date and not in conflict with the applica principle or theory underlying the inven	tion but cited to understand the
	relevance	"X" document of particular relevance; the cl	
"E" earlier ap	plication or patent published on or after the international filing date	considered novel or cannot be considered to involve an inventive step- when the document is taken alone	
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)		"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being	
"O" document	referring to an oral disclosure, use, exhibition or other means	obvious to a person skilled in the art	
"P" document published prior to the international filing date but later than the priority date claimed		"&" document member of the same patent family	
Date of the actual completion of the international search		Date of mailing of the international search report 06 DEC 2006	
21 July 2005 (21.07.2005)		Authorized officer //	<u> </u>
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